

CLAIMS

Therefore, having thus described the invention, at least the following is claimed:

- 1 1. A system for robust transmission delimiting, comprising:
- 2 a communication message including a preamble, the preamble including a
- 3 plurality of bits representing communication link control information; and
- 4 an encoder configured to encode the preamble bits into a plurality of symbol
- 5 indices, the symbol indices encoded at a lower bit per symbol rate relative to the
- 6 maximum rate capable of being supported over a communication channel.
- 1 2. The system as defined in claim 1, further comprising a gain boost element
- 2 configured to increase the energy of the first symbol index to reliably indicate the
- 3 beginning of the communication message.
- 1 3. The system as defined in claim 2, wherein the energy of the first symbol
- 2 index is increased by 3 dB.
- 1 4. The system as defined in claim 1, wherein the preamble includes
- 2 information that defines a rate at which data following the preamble has been encoded for
- 3 transmission.

1 5. The system as defined in claim 1, wherein the preamble includes
2 information defining a maximum rate at which a transceiver that is sending the preamble
3 is able to receive transmissions from a transceiver that is receiving the preamble.

1 6. The system as defined in claim 1, wherein the preamble indicates whether
2 a data portion follows the preamble and, if so, the format and type of data that follows the
3 preamble.

1 7. The system as defined in claim 1, wherein the preamble indicates whether
2 administrative information follows the preamble.

1 8. The system as defined in claim 6, further comprising:
2 a first scrambler configured to scramble the preamble; and
3 a second scrambler configured to scramble the data.

1 9. The system as defined in claim 8, in which a state of the scrambler used to
2 scramble the bits that comprise the preamble is the state that existed when scrambling of
3 a previous preamble was completed.

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1 10. The system as defined in claim 6, wherein the data portion of the
2 communication message comprises fixed size units, the fixed size units comprising a
3 plurality of bits and

4 wherein the bits are encoded into symbol indices such that, for each of the fixed
5 size units, one symbol index is encoded differently from the other symbols.

1 11. The system as defined in claim 10, wherein the differently encoded symbol
2 index further comprises an extra bit that indicates whether the fixed size unit from which
3 the other bits of the differently encoded symbol indices are obtained is the last one
4 transmitted in a message.

1 12. The system as defined in claim 10, wherein the differently encoded symbol
2 index is encoded at a data rate lower than that of the other symbols carrying message data.

1 13. A system for delimiting the end of a transmission, comprising:
2 a communication message segmented into a plurality of fixed size units, each
3 fixed size unit including a plurality of bits; and
4 an encoder configured to encode the plurality of bits into a plurality of symbol
5 indices at a first data rate, the encoder also configured to encode the first symbol index
6 containing only bits from each fixed size unit at a data rate lower than that of the first data
7 rate.

1 14. A method for robust transmission delimiting, the method comprising the
2 steps of:

3 applying a preamble to a communication message, the preamble including a
4 plurality of bits representing communication link control information; and

5 encoding the preamble bits into a plurality of symbol indices, the symbol indices
6 encoded at a lower bit per symbol rate relative to the maximum rate capable of being
7 transmitted over a communication channel.

1 15. The method as defined in claim 14, further comprising the step of
2 increasing the energy of the first symbol index to reliably indicate the beginning of the
3 communication message.

1 16. The method as defined in claim 14, further comprising the step of
2 increasing the energy of the first symbol index by 3 dB.

1 17. The method as defined in claim 14, further comprising the step of
2 including information in the preamble defining a rate at which data following the
3 preamble has been encoded for transmission.

1 18. The method as defined in claim 14, further comprising the step of
2 including information in the preamble defining a maximum rate at which a transceiver
3 that is sending the preamble is able to receive transmissions from a transceiver that is
4 receiving the preamble.

1 19. The method as defined in claim 14, further comprising the step of using
2 the preamble to indicate whether a data portion follows the preamble and, if so, the
3 format and type of data that follows the preamble.

1 20. The method as defined in claim 14, further comprising the step of using
2 the preamble to indicate whether administrative information follows the preamble.

1 21. The method as defined in claim 19, further comprising the steps of:
2 scrambling the preamble using a first scrambler; and
3 scrambling the data using a second scrambler.

1 22. The method as defined in claim 21, further comprising the step of
2 scrambling the bits in the preamble using the state of the scrambler that existed when
3 scrambling of the previous preamble was complete.

1 23. The method as defined in claim 19, wherein the data portion of the
2 communication message comprises fixed size units, the fixed size units comprising a
3 plurality of bits ; and

4 wherein the bits that comprise each of the fixed size units are encoded into
5 symbol indices such that for each of the fixed size units, one symbol index is encoded
6 differently from the other symbols.

1 24. The method as defined in claim 23, further comprising the step of
2 including in said differently encoded symbol index an extra bit that indicates whether the
3 fixed size unit from which the other bits of said differently encoded symbol indices are
4 obtained is the last one transmitted in a message.

1 25. The method as defined in claim 23, further comprising the step of
2 encoding the differently encoded symbol index at a data rate lower than that of the other
3 symbols carrying message data.

1 26. A method for delimiting the end of a transmission, the method comprising
2 the steps of:
3 segmenting a communication message into a plurality of fixed size units, each
4 unit including a plurality of bits;
5 encoding a plurality of the bits in the cells into a plurality of symbol indices, the
6 symbol indices being encoded at a first rate; and
7 encoding the first symbol index containing only bits from each fixed size unit at a
8 rate lower than that of the first rate.

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1 27. A system for robust transmission delimiting, comprising:
2 means for applying a preamble to a communication message, the preamble
3 including a plurality of bits representing communication link control information; and
4 means for encoding the preamble bits into a plurality of symbol indices, the
5 symbol indices encoded at a lower bit per symbol rate relative to the maximum rate
6 capable of being transmitted over a communication channel.

1 28. The system as defined in claim 27, further comprising means for
2 increasing the energy of the first symbol index to reliably indicate the beginning of the
3 communication message.

1 29. The system as defined in claim 27, further comprising means for
2 increasing the energy of the first symbol index by 3 dB.

1 30. The system as defined in claim 27, further comprising means for including
2 information in the preamble defining a rate at which data following the preamble has
3 been encoded for transmission.

1 31. The system as defined in claim 27, further comprising means for including
2 information in the preamble defining a maximum rate at which a transceiver that is
3 sending the preamble is able to receive transmissions from a transceiver that is receiving
4 the preamble.

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1 36. The system as defined in claim 32, wherein the data portion of the
2 communication message comprises fixed size units, the fixed size units comprising a
3 plurality of bits; and
4 means for encoding the bits that comprise each of the fixed size units into symbol
5 indices such that for each of the fixed size units, one symbol index is encoded differently
6 from the other symbols.

1 37. The system as defined in claim 36, further comprising means for including
2 in said differently encoded symbol index an extra bit that indicates whether the fixed size
3 unit from which the other bits of said differently encoded symbol indices are obtained is
4 the last one transmitted in a message

1 38. The system as defined in claim 36, further comprising means for encoding
2 the differently encoded symbol index at a data rate lower than that of the other symbols
3 carrying message data.

1 39. A system for delimiting the end of a transmission, comprising:
2 means for segmenting a communication message into a plurality of fixed size
3 units, each unit including a plurality of bits;
4 means for encoding a plurality of the bits in (the cells) into a plurality of symbol
5 indices, the symbol indices being encoded at a first rate; and
6 means for encoding (the first symbol index) containing only bits from each fixed
7 size unit at a rate lower than that of the first rate.

1 40. A computer readable medium having a program for robust transmission
2 delimiting, the program comprising logic for performing the steps of:
3 applying a preamble to a communication message, the preamble including a
4 plurality of bits representing communication link control information; and
5 encoding the preamble bits into a plurality of symbol indices, the symbol indices
6 encoded at a lower bit per symbol rate relative to the maximum rate capable of being
7 transmitted over a communication channel.

1 41. The program as defined in claim 40, further comprising logic for
2 performing the step of increasing the energy of the first symbol index to reliably indicate
3 the beginning of the communication message.

1 42. The program as defined in claim 40, further comprising logic for
2 performing the step of increasing the energy of the first symbol index by 3 dB.

1 43. The program as defined in claim 40, further comprising logic for
2 performing the step of including information in the preamble defining a rate at which data
3 following the preamble has been encoded for transmission.

1 44. The program as defined in claim 40, further comprising logic for
2 performing the step of including information in the preamble defining a maximum rate at
3 which a transceiver that is sending the preamble is able to receive transmissions from a
4 transceiver that is receiving the preamble.

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1 45. The program as defined in claim 40, further comprising logic for
2 performing the step of using the preamble to indicate whether a data portion follows the
3 preamble and, if so, the format and type of data that follows the preamble.

1 46. The program as defined in claim 40, further comprising logic for
2 performing the step of using the preamble to indicate whether administrative information
3 follows the preamble.

1 47. The program as defined in claim 45, further comprising logic for
2 performing the steps of:
3 scrambling the preamble using a first scrambler; and
4 scrambling the data using a second scrambler.

1 48. The program as defined in claim 47, further comprising logic for
2 performing the step of scrambling the bits in the preamble using the state of the scrambler
3 that existed when scrambling of the previous preamble was complete.

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1 49. The program as defined in claim 45, wherein the data portion of the
2 communication message comprises fixed size units, the fixed size units comprising a
3 plurality of bits; and
4 wherein the bits that comprise each of the fixed size units are encoded into symbol
5 indices such that for each of the fixed size units, one symbol index is encoded differently
6 from the other symbols.

1 50. The program as defined in claim 49, further comprising logic for
2 performing the step of including in said differently encoded symbol index an extra bit that
3 indicates whether the fixed size unit from which the other bits of said differently encoded
4 symbol indices are obtained is the last one transmitted in a message.

1 51. The program as defined in claim 49, further comprising logic for
2 performing the step of encoding the differently encoded symbol index at a data rate lower
3 than that of the other symbols carrying message data.

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- 1 52. A computer readable medium having a program for delimiting the end of a
- 2 transmission, the program comprising logic to perform the steps of:
- 3 segmenting a communication message into a plurality of fixed size units, each
- 4 unit including a plurality of bits;
- 5 encoding a plurality of the bits in the cells into a plurality of symbol indices, the
- 6 symbol indices being encoded at a first rate; and
- 7 encoding the first symbol index containing only bits from each fixed size unit at a
- 8 rate lower than that of the first rate.

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